

### REMARKS

This is a full and timely response to the above-identified, non-final Office Action. Reexamination and reconsideration of the application in light of the following remarks are requested.

Claims 1 through 16 were originally filed in the instant application. Pursuant to a restriction requirement and a subsequent election, claims 12 through 16 have been withdrawn from consideration. Claims 1 through 11 remain pending and under consideration; claims 1 and 10 are independent claims. No claims have been cancelled, added or amended. Claims 1 through 11 were rejected under 35 U.S.C. 112, claims 1 and 7 were rejected under 35 U.S.C. 102 and claims 2 through 6, and 8 through 11 were rejected under 35 U.S.C. 103. Claim 17 has been designated as being withdrawn.

### The Rejection of Claims 1 through 11 Under 35 U.S.C. 112

Claims 1 through 11 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. This rejection is respectfully traversed.

First, the Examiner urges that the whereby statements render the claims indefinite because the statements are functional do not define structure and, thus, cannot serve to distinguish. While a whereby statement may fail to distinguish in certain factual situations, it is believed that the Examiner may be confusing the fundamental issue presented here. By stating that the whereby statements are not being considered in terms of an effective limitation, the result is simply that the claim is broadened, not that the claim is indefinite. The scope of the claims is clear when measured by the applicable standard, i.e. one of ordinary skill.

In the second stated grounds the Examiner finds that the presence of the term "smaller" to be a relative term that renders the claim indefinite because it is not defined by the claim and the specification does not provide a standard. Thus, according to the Examiner, one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The issue is thus somewhat similar to that presented by the first grounds.

The claims at issue, however, simply state that one current is smaller than the other current in the disclosed device, a concept readily understood by one of ordinary skill.

This rejection should be withdrawn.

**The Rejection of Claims 1 and 7 Under 35 U.S.C. 102**

Claims 1 and 7 were rejected under 35 U.S.C. 102(b) as being anticipated Okamoto et al. ("Okamoto"). This rejection is respectfully traversed.

Of the rejected claims (1 and 7), claim 1 is the independent claim upon which claim 7 is dependent. The Applicant's discussion of the rejection will focus on claim 1. The Examiner, in discussing the teachings of Okamoto, finds three clad layers, a contact layer, and an active layer, elements recited in claim 1. Then the Examiner finds an electrode connected to the contact layer and a current injected from "said" electrode via the second clad layer. Thus, the Examiner finds a single electrode contacting both the contact layer and the second clad layer. While the single electrode connecting both the contact and second clad layers is recited in claim 1, this feature is not to be found in Okamoto.

For a claim to be anticipated, every limitation must be found in the applied reference. Moreover, in an apparatus claim, not only must the limitations be found, but also the limitations, when taken together, must result in the claimed structure. Claim 1, in essence, defines a

laser structure by reciting a number of features that, in turn, define a number of layers in a given order. The applied reference as well as the Examiner's description of the reference fails in many respects; therefore, the factual findings are traversed.

Claim 1 recites a laser structure in terms of layers that are built up from a substrate. From the substrate up there is a first clad layer, an active layer, a second clad layer, a third clad layer and a contact layer in that order. The three clad layers have recited conductivities. A single electrode contacts both the contact layer and the second clad layer. The whereby clause contains language to the effect that the current from the electrode into the contact layer is greater than the current from the same electrode into the second clad layer. Claim 7, directly dependent upon claim 1, recites the variation of the thickness of the third clad layer and the width of the current injection stripe region to vary the degree of self pulsation.

However, the Examiner's rejection describes layers that are not in the order required to meet the claim, indicates that the clad layers have conductivities that cannot be found in the reference, finds a single electrode rather than two, finds a smaller current being injected

into the clad layer than into the contact layer, and finds control of pulsation through the variation of third clad layer thickness and the width of the current injection stripe region.

Okamoto's three clad layer embodiment builds up, in turn, from a core layer, a first cladding layer, a second cladding layer, an active layer, a third cladding layer, with separate electrodes connected to the second and third cladding layers (not the contact layer as claimed), respectively, structure that is very different from the invention as defined by claim 1.

This rejection is untenable and should be withdrawn.

**The Rejection of Claims 2 through 6 and 8 through 11 Under  
35 U.S.C. 103**

Claims 2, 6 and 8 through 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nemoto in view of Uchida. This rejection is also respectfully traversed.

The Examiner, referring to claims 2 and 6, states that Nemoto discloses the claimed invention except for a saturable absorption region at the ends of the laser light oscillation region and an etching stop layer between the second and third clad layers. The Examiner then states that it would have been obvious to combine Nemoto with

Uchida in that Uchida teaches such absorption region and an etching stop layer.

The Examiner's premise that Nemoto discloses the claimed invention other than the stated exceptions, is factually erroneous. Suffice it to state that claim 1 recites a three clad layer device where the third clad layer is formed at an upper layer of the second clad layer and, most importantly, an electrode that contacts both a contact layer and a second clad layer. Nemoto's lasers are two clad layer devices, not three, and have electrodes that contact one layer each, not two. Thus, the Examiner's position that Nemoto discloses the claimed invention except for the stated exceptions (all of which pertain to limitations in the dependent claims, not independent claim 1, fails.

The combination of Nemoto with Uchida is an unsuccessful attempt to fill in the gaps in Nemoto with the teachings of Uchida. While Uchida may teach an etching stop layer and an absorption region, at this point it should be clear to the Examiner that, in fact, Uchida does not fill in the disclosure gaps in Nemoto.

Claim 8 recites a specific range of thickness for the third clad layer while claim 9 recites a specific range of width for the current injection stripe region. Uchida does

not disclose these ranges so it is not clear why Uchida was employed for the purpose of rejecting these claims. The Examiner relies on a case that holds that where the general conditions of a claim are disclosed by the prior art, discovering optimum ranges involves only routine skill in the art. That point need not be discussed because it is clear from the above discussions that the general conditions of the claim(s) are not disclosed in the prior art.

This brings us to the issue of the propriety of the combination of references. This was discussed at length in the previous response.

There is no teaching or suggestion of the proposed combination, i.e., Nemoto and Uchida, in the references themselves. That leaves the issue of motivation. Motivation for the combination requires more than a statement of what a particular feature in a reference does. Why would an artisan in the laser art be directed to combine Uchida with Nemoto and take these particular features of Uchida and modify Nemoto with them?

Claims 3 through 5 and 10 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Nemoto. This rejection is also respectfully traversed.

The broad issues discussed above are equally applicable here. It's only the particular references employed vis-à-vis these claims that differ. The Okamoto and Nemoto references are discussed above. There is no teaching or suggestion of the combination in the references nor a motivation to make the combination. Nevertheless, what the combination would teach if it were proper may be discussed.

The Examiner has combined Okamoto with its layers in a different order than claimed (the active layer is between the second and third clad layers as opposed to between the first and second clad layers, as recited in both claim 1 and claim 10, the independent claims) and its two separate electrodes, one for the second clad layer and one to the third clad layer, as opposed to a single electrode that connects to the contact layer and the second clad layer, as recited in both claims 1 and 10. In essence, claim 10 is claim 1 extended to a plurality of lasers. The Examiner then combines Nemoto with Okamoto. While Nemoto teaches two lasers on a single substrate, it is a two clad layer device with a single electrode that applies voltage to only one layer.

With respect to the rejection of claims 3 through 5, the Examiner ignores the fact that Okamoto's layers are in



a different order than that claimed and continues to cloud the single electrode-double contact issue with language that could lead one to believe that Okamoto, in fact, has a single electrode that contacts two layers. These three claims are all dependent on claim 1 and the rejection must treat the claims as a whole. Claim 5 presents the single electrode, double contact issue in a different way by reciting that the double contact is made from the titanium side of the electrode.

As to the rejection of claims 10 and 11, as indicated above, a plurality of lasers, each with the laser structure recited in claim 1, are set forth with claim 11 additionally reciting that the plurality of lasers are on a common substrate. This rejection, like the others, cannot be maintained and should be withdrawn.

#### **The Consideration of Claim 17**

The instant application was filed with seventeen claims. The USPTO, prior to any action on the merits, required a restriction/election with respect to the apparatus and method claims but failed to address claim 17, a method claim. From that time until the present, neither the Examiner nor the Applicant's attorney recognized this omission during the following prosecution of the

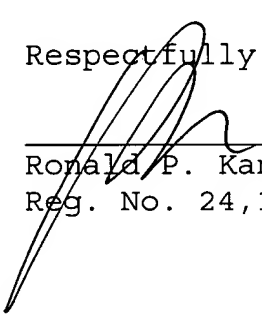
application. Because claim 17 is a method claim and thus belongs to the non-elected group, this claim has simply been included above and indicated as being withdrawn.

Conclusion

Because all claims herein are believed to be allowable, the early passage to issue of the instant application is respectfully solicited.

In the event that the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is invited to telephone the undersigned attorney at the below-listed number.

Respectfully submitted,



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